

CASTILLEJA ANGUSTIFOLIA VAR. DUBIA (SCROPHULARIACEAE),
A NEW RECORD FOR SOUTH DAKOTA

Grace Kostel

Black Hills State University
1200 University Street, Unit 9003
Herbarium, J159
Spearfish, South Dakota 57799-9003, U.S.A.
GraceKostel@bhsu.edu

Lynn Hetlet

USDA FS Nebraska National Forest
Buffalo Gap National Grassland
1801 Highway 18 Bypass
Hot Springs, South Dakota 57747, U.S.A.
lhetlet@fs.fed.us

ABSTRACT

We report the first documented occurrence of *Castilleja angustifolia* (Nutt.) G. Don var. *dubia* A. Nelson (*C. chromosa* A. Nelson) in South Dakota. The species was found on the Buffalo Gap National Grassland by Lynn Hetlet in 2002 and subsequently collected, identified, and vouchered by Grace Kostel in 2006. Its distribution, salient morphological features, and habitat are discussed.

RESUMEN

Citamos la primera ocurrencia documentada de *Castilleja angustifolia* (Nutt.) G. Don var. *dubia* A. Nelson (*C. chromosa* A. Nelson) en Dakota del Sur. La especie fue encontrada en el Buffalo Gap National Grassland por Lynn Hetlet en 2002 y luego colectada, identificada y comprobada por Grace Kostel in 2006. Se discuten la distribución, los rasgos morfológicos sobresalientes y el hábitat.

INTRODUCTION

The *Artemisia tridentata* Nutt. shrub habitat in southwest South Dakota begins to give way to mixed-grass prairie and represents the extreme eastern edge of *A. tridentata*. Much of the immediate region is under public ownership and administered by the USDA Forest Service Nebraska National Forest. *Castilleja angustifolia* var. *dubia* (*C. chromosa*) is an associate of *A. tridentata* at lower elevations (Holmgren 1984). A floristic inventory of the Buffalo Gap National Grassland and vicinity was conducted recently, and led to the discovery of several other species new to the grassland (Kostel 2006).

Distribution.—*Castilleja angustifolia* var. *dubia* (*C. chromosa* A. Nels.) ranges throughout and peripheral to the Intermountain region, central and eastern Wyoming, western Colorado, northwest New Mexico, central and northern Arizona, and eastern California (Holmgren 1984; Chumley 1996).

Voucher specimen: **U.S.A. SOUTH DAKOTA. Fall River Co.:** T8S R1E S34 N1/2 Mule Creek SE Quad.; 43.3169° N; -103.9876° W (Datum = NAD83 Zone 13); Buffalo Gap National Grassland ca. 8 air mi WNW of Edgemont and ca. 1 mi due N of SD Hwy. 18; *Artemisia* shrub-steppe; one plant with ca. 12 inflorescences, bright yellow; soils are coarse (sand with gravel), permeable, and overlies shale, 20 May 2006, Grace Kostel 10056 (BHSC, SD, USA).

Morphology.—Perennial herb from woody base, 1–4 dm tall, stems ascending to erect, usually several in a cluster, herbage densely hispid with long, somewhat flat, multicellular hairs; leaves with 3–7 lobes distally; inflorescence often broad and compact, bright red to orange-red, occasionally yellow; bracts lanceolate with 1–3 pairs of rounded segments; calyx 20–27 mm long, the primary lobes 6–12 mm long adaxially, 4–10 mm long abaxially; corolla 20–32 mm long, galea 10–18 mm long, about half the corolla length, the lower lip much reduced with incurved teeth, the tube 10–13 mm long; capsule 9–15 mm (Holmgren 1984; Dorn 2001).

Soil.—The most influential feature affecting vegetation at the site of *C. angustifolia* var. *dubia* is soil. Soils are of the Samsil series characterized by clay, smectitic, calcareous, mesic, shallow, and aridic ustorthent found on gently sloping to very steep hills, ridges, and breaks of dissected shale plains. These soils formed in alluvium or residuum weathered from shale. The loose texture makes it susceptible to localized wind erosion of topsoil when it is grazed too heavily (Soil Survey Staff 1982).

Habitat.—The area supports dry upland shrub communities of *Artemisia tridentata* Nutt. ssp. *wyomingensis* Beetle & Young, *Ericameria nauseosa* (Pall. ex Pursh) G.L. Nesom & Baird, *Atriplex* spp., and *Sarcobatus*

vermiculatus (Hook.) Torr. These shrubs are interspersed with bare ground and graminoids, e.g., *Bouteloua gracilis* (Willd. ex Kunth) Lab. ex Griffiths, *Bouteloua curtipendula* (Michx.) Torr., *Hesperostipa comata* (Trin. & Rupr.) Barkworth, *Pascopyrum smithii* (Rydb.) Á. Löve, and *Bromus* spp. The forbs *Thermopsis rhombifolia* (Nutt. ex Pursh) Nutt. ex Richardson, *Draba nemorosa* L., *Lesquerella arenosa* (Richardson) Rydb. var. *arenosa*, *Penstemon eriantherus* Pursh, *Oxytropis lambertii* Pursh, *Lepidium densiflorum* Schrad., *Descurainia pinnata* (Walter) Britton, and *Androsace occidentalis* Pursh are associate species at this site. The Buffalo Gap National Grassland is leased for cattle grazing. Additionally, the area is browsed by native fauna including deer, antelope, and small mammals.

DISCUSSION

This is the first report for *C. angustifolia* var. *dubia* in South Dakota. It has conservation status in Montana (S3) and Idaho (S4) and is SNR/SU throughout the remainder of its range (Nature Serve 2008). *Castilleja angustifolia* var. *dubia* is not a rare species when its entire range is considered, and certainly it is not rare in adjacent Wyoming (Chumley 1996); however, its occurrence in southwestern South Dakota is likely due to the unusual habitat.

CONCLUSIONS

Upon review of specimens at BHSC and RM, it is clear that *Castilleja angustifolia* var. *dubia* occurs in southwestern South Dakota on the Buffalo Gap National Grassland in Fall River County. Additional floristic surveys in the area might result in the discovery of additional plants.

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